WHAT IS CLAIMED IS:

1. A matrix switch of an optical waveguide type comprising a first set of m mutually parallel optical waveguides arranged on a substrate, a second set of n mutually parallel optical waveguides intersecting the first set of optical waveguides and arranged on said substrate (m and n are integers), and switching grooves for switching between light paths each arranged at each of the intersections of said first and second sets of optical waveguides, characterized in that:

a switching part for selecting either one of a light path extending from an input port of said first set of optical waveguides to an output port of said first set of optical waveguides and a light path extending from an input port of said first set of optical waveguides to an output port of said second set of optical waveguides is provided, said switching part being an insertion plate having a reflective surface and arranged for insertion into said switching groove; and

each of said switching grooves is arranged on an imaginary straight line connecting intersections of said first and second sets of optical waveguides and filled with a liquid having a refractive index matching with that of said optical waveguide.

2. The matrix switch of an optical waveguide type as

claimed in claim 1, characterized by comprising an area of deep grooves which is approximately as deep as said switching grooves are arranged in an area other than said optical waveguides on said substrate.

3. The matrix switch of an optical waveguide type as claimed in claim 2, characterized in that said area for deep grooves is deeper than said switching grooves.

4. The matrix switch of an optical waveguide type as claimed in claim 1, characterized in that the width of said switching grooves is 10μm or less.

5. The matrix switch of an optical waveguides type as claimed in claim 1, characterized by comprising a first set of dummy grooves transmitting light and being arranged at any of input port of said first set of optical waveguides, a second set of dummy grooves transmitting light and being arranged at any of output port of said first set of optical waveguides, and a third set of dummy grooves transmitting light and being arranged at any of output port of said second set of optical waveguides,

wherein each of said dummy grooves are arranged on an imaginary straight line connecting intersections of said first and second sets of optical waveguides and filling each of said dummy grooves with a liquid having a refractive index matching with that of said optical

waveguides.

6. The matrix switch of an optical waveguide type as claimed in claim 5, characterized in that said dummy grooves are arranged such that signal light incident into the input ports of said first set of optical waveguides passes m+n-1 grooves before outputting from the output ports of said first set of optical waveguides or said second set of optical waveguides.

7. The matrix switch of an optical waveguide type as claimed in claim 5, characterized in that the width of said switching grooves and/or said dummy grooves is 10μm or less.

8. A method for manufacturing a matrix switch of an optical waveguide type comprising a first set of m mutually parallel optical waveguides arranged on a substrate, a second set of n mutually parallel waveguides intersecting said first set of optical waveguides and arranged on said substrate (m and n are integers), and switching grooves for switching between light paths each arranged at each of the intersections of said first and second sets of optical waveguides, characterized by comprising:

arranging an area for deep grooves with depth deeper than the depth rotationally cut by a cutting edge outside said optical waveguides on said substrate; and

forming each of said switching grooves on said imaginary straight line by rotationally cutting an upper surface of said substrate, on which said first and second sets of optical waveguides have been formed, by said cutting edge.

9. The method for manufacturing a matrix switch of an optical waveguide type as claimed in claim 8, characterized in that said matrix switch of an optical waveguide type comprises a first set of dummy grooves transmitting light and being arranged at any of the input ports of said first set of optical waveguides, a second set of dummy grooves transmitting light and being arranged at any of the output ports of said first set of optical waveguides, and a third set of dummy grooves transmitting light and being arranged at any of the output ports of said second set of optical waveguides, and

said method further comprises forming each of said switching grooves and/or said dummy grooves on said imaginary straight line.